THE

DENTAL PRACTITIONER

A monthly journal for the Practitioner and his Staff

OL. IV, NO. 8 APRIL, 1954

[*Incorporating the Proceedings of the British Society of Periodontology, and the Transactions of the British Society for the Study of Orthodontics*]

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A Monthly Journal for the Practitioner and his Staff

(Incorporating the Proceedings of the British Society of Periodontology, and the Transactions of the British Society for the Study of Orthodontics)

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EDITORIAL

ABSTRACTS

A SERVICE that is becoming of increasing importance is a journal's section on Abstracts. With the vast amount of medical and dental literature that is published each year, it is quite impossible for anyone to peruse even a reasonable percentage. Apart from any particular interest in one specialty which is usually read in full, it is useful to acquire a knowledge and understanding of the correlated problems of all aspects of medicine to dentistry, as well as purely dental ones. Many dental problems are dealt with in the medical press—from nutrition to thumb-sucking—but few of them are brought to the notice of the dental surgeon, simply because it is impossible to spare the time to read so many journals. The aims and objects of our abstracting service are to give a brief account of articles written on all aspects and related aspects of dentistry, published in the English-speaking and foreign countries. Good abstracting is not easy and the choice is sometimes even more difficult, for a careful balance must be maintained both in subject matter and methods. A word of praise is due here to our able team of abstractors who perform such a useful service for this journal.

To keep up to date in this high-pressure existence is essential if the profession is to progress. A knowledge of what the rest of the world is doing is as essential as knowing what is going on in one's own country. New materials, new drugs, new techniques are always being perfected and their reports published in the world's dental press. It is our aim to bring before you a résumé of these matters. At the moment nearly all the journals written in English are covered, but there is a grave lack in the abstracting of foreign journals owing to the language difficulty. We cannot promise to overcome this factor until our abstracting team is enlarged to enable us to undertake the necessary translations. If any readers are willing to help in this work we would be more than grateful.

The abstractors may work anonymously, but their efforts are highly appreciated, for they bring to the practitioner a wider vision of dentistry and a glimpse of the other man's work in the world at large.

PERIODONTAL STIMULATION

By **A. BRYAN WADE**, B.Ch.D., F.D.S. R.C.S.

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STIMULATION is the application of something that evokes functional reaction in tissues. It may, of course, vary considerably in both quantity and quality, and assessment of the requirements of healthy tissues is difficult. In health a state of equilibrium exists, but if the degree of functional stimulation is altered, or if the tissues are in some way changed, disease will be present.

An understanding of the normal, as distinct from the pathological, is essential if such disturbances are to be appreciated.

THE PERIODONTIUM

First, it is important to have a conception of the tooth which is slightly different from that commonly held. There is a tendency to regard a tooth as being that which is obtained from the jaws by the common method of extraction with forceps. This is, however, the tooth plus part of the attachment apparatus. The true tooth is the pulp-dentine complex with its overlying cap of enamel. Cementum is a tissue elaborated for the purpose of attaching the tooth. This attachment is achieved by means of collagenous fibres inserted within the cementum and running across a narrow space to gain insertion at their other extremity into the bone of the alveolar process, which is created solely for this purpose (Weinmann, 1941).

To appreciate this conception more fully one must consider the development of a tooth. The epithelial sheath of Hertwig (Brunn, 1887) can be regarded as the mould which determines the form of the root, and until such time as root dentine begins to be laid down the fibres of the dental follicle, the formative organ of all the supporting tissues, are arranged in a circular manner. As soon as the first dentine of the root is formed, however, the epithelial sheath in that area breaks up into a network (Bruszt, 1932) and the innermost fibres of the follicle orientate in order to run at right angles to the surface of the dentine. Between these fibres cell differentiation occurs, producing cementoblasts which lie against the dentine, and active eruption commences. The fibres of the more peripheral parts of the follicle also become orientated and assume a similar relation to the bone, whilst the intermediate fibres which are mainly pre-collagenous, are arranged in a loose irregular manner (Orban, 1953).

The tooth is, of course, at this time non-functional. Active eruption, however, continues and cementum is laid down on the dentine whilst the bone of the alveolar process is deposited superficially to the basal part of the bone. It is only when the tooth attains occlusion, and so has work to perform, that the full degree of rearrangement of the fibres of the dental follicle is achieved and the characteristic pattern of the principal fibre bundles of the periodontal membrane can be observed (Orban, 1953).

This pattern is remarkably constant in relation to teeth which are being functionally stimulated. Even when a destructive inflammatory lesion has destroyed the more superficial tissues it is still present, provided that there is sufficient support to bear the stresses of occlusal contact. Erickson, Kaplan, and Aisenberg (1945) showed the remarkable persistence of the transeptal fibres even when almost all the bony support had been lost. In the degenerative condition known as periodontosis, however, there is a breakdown of the principal fibres, which are replaced by a loose network of fibrous and œdematous tissue (Goldman, 1949). Unfortunately it is not possible to ascertain by any available diagnostic means the precise arrangement in a patient who might seek advice.

A picture of the bony pattern can, however, be obtained by exposing radiographic films. It is not widely appreciated that the pattern of the trabeculæ within the bone indicates the

degree of functional stimulus being transmitted to the alveolar bone. The pattern to be found around posterior teeth which are fully functional is of parallel trabeculæ, each being relatively stout, running between the roots of the teeth and between adjacent teeth (*Fig.* 1). Usually four or five trabeculæ are present in the supporting bone of a tooth of average length (Seipel, 1948).

This conception of the dental organ or tooth consisting of the pulp-dentine and enamel, and the organ of support, or the periodontium, consisting of the cementum, periodontal membrane, alveolar process, and overlying gingival tissue (Bernier and Becks, 1952) is of fundamental importance.

STIMULATION OF THE PERIODONTIUM: THE DEEP TISSUES

It is very easy to regard cementum and bone as static tissues very similar to the enamel, owing no doubt to the fact that they are calcified tissues. Such a conception is erroneous. Bone is in a constant state of resorption and repair, an equilibrium being maintained in the healthy adult. Although cementum does not undergo exactly the same changes as bone, it too is capable of a considerable degree of fluctuation. In order to maintain the attachment of the principal fibres of the periodontal membrane it appears that cementum is very slowly apposed throughout the functional life of the tooth (Gottlieb, 1942). In addition, cementum is quite definitely capable of repair. Even in areas where there has been resorption extending into the dentine, subsequent deposition of cemental layers over the resorbed surface can often be observed histologically (Orban, 1928).

It seems probable that teeth undergo occlusal and incisal attrition and yet the vertical dimension of the masticatory apparatus remains constant owing to the slow but continuous vertical eruption of the teeth (Weinmann and Sicher, 1946). Similar wear occurs on the proximal aspects of the teeth owing to the movement of adjacent teeth, one relative to the other, in the act of mastication. Stein and Weinmann (1925), in drawing attention to this fact, have shown that there is a continuous mesial movement of the teeth in order to maintain proximal contact. This movement is permitted by the resorption of bone on the mesial wall of the socket and the filling in of bone on the distal wall. In order that the support of the tooth shall not be unduly weakened it seems that this mesial drift is a kind of shuffling movement, for evidence of resorption is never found along the entire length of the mesial aspect of the socket. It does, however, once more emphasize the fact that the periodontium is an organ containing very vital tissues not to be compared with the enamel.

Fig. 1.—Radiograph showing the horizontal arrangement of the trabeculæ in relation to the mandibular posterior teeth in a mouth where the periodontal tissues are receiving adequate functional stimulation.

Being comprised of such vital tissues it is not difficult to understand why exercise should be of such importance to the periodontium. Should a limb be splinted for more than a few days and then freed, it will be unable to perform the tasks it did previously. If, however, the principles of physiotherapy are applied to this enfeebled member it can, in time, be brought back to its former condition, whilst continuation of the exercise along a carefully graded schedule will cause hypertrophy of the muscles. Examination of the bony structure would show certain changes in the trabecular pattern. During splinting there would be a gradual loss of orientation, but on the restoration of function there would be a progressive orientation of the trabeculæ to lie in a manner best adapted to resist stresses. Exactly similar changes may occur in the periodontium (Weinmann and Sicher, 1947).

Accident Trauma.—The periodontal effects of a blow on a tooth differ. An inflammatory response occurs invariably, whilst there may also be rupture of some blood-vessels and occasionally some degree of fracture. A simple inflammation will usually resolve if the periodontal tissues are rested. Such rest may be produced by voluntary action by the patient, by temporary splinting, or by grinding the tooth out of function, although this is not the best way.

Fig. 2.—Radiograph illustrating the extremely high degree of periodontal repair which can occur after a root fracture. Two distinct layers of lamina dura can be observed covering each of the fracture surfaces.

A fracture may involve the bone of the alveolar process, the cementum only, both cementum and dentine, or all three hard tissues, whilst an oblique fracture involving both crown and root may also occur. Fracture of the cementum alone is usually termed a "cemental tear" and is not usually diagnosed by the clinician. It is of little significance, for the detached fragment merely forms an island of calcified tissue within the periodontal membrane around which further calcific material is deposited and a cementicle formed. The prognosis for more extensive degrees of fracture is variable. In those where both the crown and root are involved in the same fracture line the outlook is hopeless. Where the injury involves the dentine of the root the chance of repair occurring depends upon the height of the fracture line, the occlusal relationship, and the possibility of secondary infection. These are also the hazards of apicectomy, and where this operation is likely to succeed the results of the blow are unlikely to bring about loss of the tooth. Knowledge about the repair of root fractures has been reviewed recently by Omnell (1953), who concludes that in favourable cases where the fracture is incomplete and the injury to the pulp is insignificant the fractured surfaces may become joined together by calcified repair tissue resembling cementum. He believes that the pulp is mainly responsible for this type of repair. In more severe cases with complete root fractures the periodontal membrane is thought to play an important part, although actual union of the fractured ends is not normally observed. An extremely high degree of periodontal repair may occur, however, and two distinct layers of lamina dura covering the fracture surfaces may be formed (*Fig.* 2).

Occlusal Trauma.—There is little doubt that lack of occlusal harmony can be an aetiological factor in the production of a periodontal lesion, but there is much controversy regarding the time at which a potentially traumatic relation actually becomes injurious. Fish (1952) considers that adverse stresses of mastication may contribute to the loss of bone and consequent loosening of teeth, but are never the primary cause. He believes that a septic breakdown is a necessary precursor, producing a certain loss of tissue and a lowering of tissue resistance. In advanced lesions it is extremely difficult, if not impossible, to say which occurred first, for where a traumatic factor can be diagnosed almost invariably a septic process can be observed.

The exact role which trauma plays in periodontal lesions is unknown. It would appear that, just as in any other irritating factor, there are three things to consider: First there is the degree of trauma; secondly the duration; and thirdly the tissue response.

It is not uncommon to find a tooth becoming hypersensitive to occlusal stresses shortly after an over-contoured restoration has been inserted. The phenomenon here is almost certainly that of a simple inflammation with excessive fluid exudation into the tissue spaces.

It seems that if the degree of over-contouring is not corrected soon, either by the dentist or by the restoration wearing away, strangulation of blood-vessels occurs and an area of local tissue necrosis is produced. Such a necrotic area becomes a suitable nidus for subsequent bacterial contamination and the formation of a periodontal abscess. Should this lesion occur in the periapical area it will usually give rise to degenerative changes of the pulp tissue, but more commonly the lesion is periodontal.

In both this type of trauma and accident trauma the quality of the tissue response seems to be of minor significance. When, however, the traumatic agent is effective for a much longer interval of time there may be entirely different types of tissue reaction. The trauma may be due to an acquired habit such as finger-nail biting, pencil chewing, pipe smoking, hair-grip opening, and thread breaking, as well as many others. In habits of this type the abnormal stress is applied to only a few teeth, usually in the anterior region. Ill-conceived orthodontic forces may also be responsible. Other habits such as tooth grinding (bruxism and bruxomania), and tooth clenching have a far more diffuse effect (*Figs.* 3, 4). It would appear to be in the latter group of habits that the part played by the tissue resistance is of greatest significance. In some individuals there may be a destructive change in the periodontal tissues with eventual loosening of the teeth, whilst in others there may be a loss of tooth tissue, but a proliferative response by the supporting tissues. Should there be excessive loss of tooth tissue the danger becomes not one of periodontal breakdown, but of a temporomandibular joint disturbance and impaired masticatory efficiency and appearance. In such cases it may be considered desirable to restore the vertical dimension and attain a more pleasing æsthetic effect by means of an overlay denture (Munns, 1950).

The exact manner in which loosening of the teeth occurs as a result of repeated heavy functional stresses is, as yet, uncertain. It has been shown that repeated trauma to capillary vessels will lead to the formation of a thrombus, which will occlude the vessels and cut off the nutritive flow to an area. This would cause local necrosis, and, if occurring in the periodontal membrane, would be sufficient explanation of the increased degree of tooth mobility observed on clinical examination (Westin, 1953). Although this type of pathology has been illustrated experimentally in the capillary vessels of the mesentery of a rhesus monkey

Fig. 3.—Radiographs of a patient with a full dentition who is a builder's labourer of a nervous temperament and performs tooth clenching and grinding during both work and sleep. (*See Fig.* 4.)

Fig. 4.—The patient whose radiographs are shown in *Fig.* 3, illustrating how only a slight inflammatory periodontal lesion is present.

(Knisely, Eliot, and Bloch, 1945), it is a very different matter to show that occlusal stresses produce the same sequence of events (*Figs.* 5, 6).

In other individuals the response to a similar type of stress may be of a proliferative nature. Thus one can observe cases in which there is marked thickening of the alveolar bone, and, if such cases are examined histologically, cemental spikes (Gottlieb, 1927) may

Fig. 5.—A periodontal abscess related to the mandibular right central incisor which was taking the entire occlusal stress in the act of incising food. The patient is aged 8 and there is no pocket formation.

be seen apparently giving greater strength to the periodontal attachment. Such spikes are not easily detected by radiographic examination, but another form of proliferative response, that of hypercementosis, is not infrequently observed in association with teeth which have undergone excessive occlusal stresses.

Lack of Function.—The amount of stimulation which the periodontium should receive by way of masticatory exercise is a matter of opinion. Many animals are eating during the greater part of their waking hours, but such extensive exercise can hardly be prescribed for patients. There seems to be little doubt, however, that by eating two or three meals per day adequate stimulation will be provided if these meals contain sufficient tough food and if the occlusion is balanced.

Impaired function may be present owing to malpositioning of certain teeth or there may be complete lack of function owing to faulty skeletal development or abnormal eruption. By far the commonest cause of loss of functional stimulus to the periodontal tissues, however, is one for which the dentist is responsible. The removal of a tooth with failure to restore the occlusal balance by some form of prosthesis, be it a fixed bridge or a denture, means that two teeth of the opposing jaw immediately have their quota of exercise seriously curtailed. Subsequent tilting of adjacent teeth and

Fig. 6.—Radiograph of the patient shown in *Fig.* 5 illustrating how indistinct are the entire periodontal shadows in the affected area. This appearance supports a belief that the lesion is traumatic in origin and that the infection is secondary.

over-eruption of the antagonizers produces an unequal distribution of the occlusal stresses, as well as other deleterious factors, and the whole train of a periodontal breakdown has been accelerated (*Fig.* 7). From this day onwards all conservative work may well be little other than patchwork.

The pattern of the trabeculæ to be found in mouths where the periodontium is being adequately stimulated has already been mentioned. Decreased function produces striking changes in these trabeculæ. In cases of only partial loss the trabeculæ become much thinner though still plentiful, but there is no architectural pattern apparent. If function is entirely absent the trabeculæ disappear almost completely and the bony support of the tooth becomes little more than thin plates of bone with a large marrow space between (Kellner,

1928). Such changes are an example of atrophy, and this condition is commonly referred to as disuse atrophy.

Treatment.—Discussion of the effect of exercise on the deeper tissues of the periodontium would be incomplete without a brief mention of treatment. Treatment necessitates occlusal equilibration. Occlusal equilibration is not synonymous with occlusal grinding, but entails every form of dentistry which can effect the occlusal plane and the relationship between the jaws. It is the process whereby the functional forces of mastication are distributed equally throughout the natural dentition (Glickman, 1953).

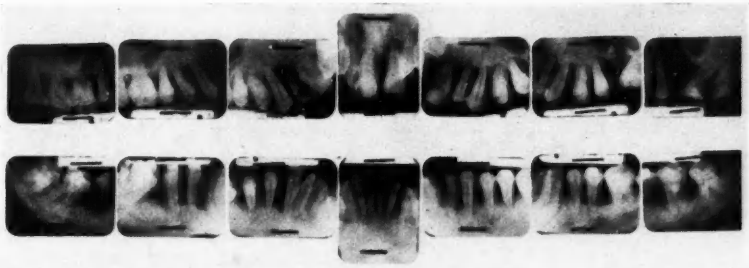

Fig. 7.—Radiographs of extensive periodontal destruction in which the occlusal harmony has been considerably deranged subsequent to the sacrifice of $\frac{|6}{6|}$. A difference in height between the lingual and vestibular plates of the alveolar process is clearly shown by the double shadows of the alveolar margins. No systemic aetiological factor was detected but direct local irritation was present.

STIMULATION OF THE PERIODONTIUM: THE SUPERFICIAL TISSUES

The Need for Friction.—Civilization has unfortunately removed much of the natural frictional stimulus to the gingival tissues. In a mouth where the arches are smooth curves and there is harmony in the inter-jaw relationship, by careful selection of foods which contain sufficient fibrous material it is still possible to keep the gingivæ in a healthy condition. Unfortunately, such a mouth is owned by few members of the British race.

There is doubt about the way in which friction supplied either by fibrous foods or different aids to oral hygiene actually assists in maintaining the health of the gingival tissues. An extremely comprehensive review of the literature on this subject was made by O'Rourke (1947), whilst Robinson and Kitchin (1948) showed that brushing increased the tendency to keratinization, but did not observe hyperkeratinization in any of their experimental subjects. Fish (1952) drew an analogy with callus formation on the hands and considered that friction applied to the gingival margins produces hyperkeratinization. Castenfelt (1952), in experiments on humans, was unable to demonstrate histologically any greater degree of keratinization of gingival tissue from an area which had received friction twice daily from wood sticks and a brush when compared with similar tissue from the same mouth which had not received supplementary friction. Emslie (1953) appears to believe that the value of either fibrous foods or a brush is their cleansing action whereby the accumulation of a substrate suitable for bacterial propagation is prevented.

Michaelis (1950) and Veldkamp (1951) believe that superficial stimulation of the gingivæ promotes good capillary tone and ensures a satisfactory tissue metabolism. Even more recently Baume (1953) has demonstrated the importance of tonofibrils produced by the basal cells of the gingival epithelium. He concludes that vitality of the gingival epithelial cells is of extreme importance in preventing epithelial detachment from the root surface.

There is general agreement, however, that most people require some form of artificial

stimulation of the gingivæ and this is most readily provided by a brush. A recent referendum showed that there is a reasonable degree of unanimity amongst the profession in this country regarding the brush which might be recommended for general use. It would appear, though, that a greater density is required than is obtained in most three-row brushes. This can be achieved either by placing the tufts of

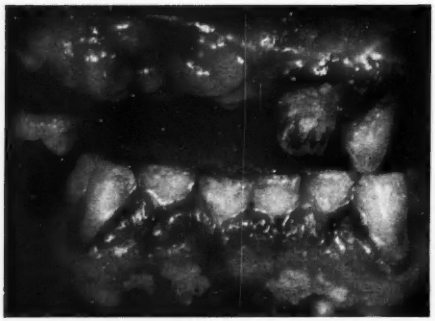

Fig. 8.—The appearance which denotes gross neglect, but which makes it difficult to decide the part played by stagnation or lack of frictional stimulation in the pathogenesis of the lesion.

the middle row opposite the spaces of those in the outer rows, or by having many more tufts each containing fewer filaments. Also for efficiency in use and to reduce the chances of superficial laceration to the gingival tissue a haystack trim is recommended (Wade, 1953).

Excess Friction.—The profession has been strangely conservative in its acceptance of nylon as a replacement of bristle. No scientific evidence has been advanced to show that nylon is in any way more dangerous than is bristle. In fact, it has been shown that the harmful effects produced by brushing are probably due to the abrasive content of the dentifrice (Addis, 1951).

Occasionally friction applied to the superficial tissues might be excessive and give rise to different manifestations of trauma. It may be produced by excessive over-bite; by the injudicious use of aids to oral hygiene and gingival massage, especially brushes; and by faulty prostheses, particularly dentures.

Lack of Friction.—When considering the gingival tissues it is so difficult to separate the effects of massage from those of cleanliness that the precise results of insufficient stimulation are uncertain (*Fig.* 8).

It is not uncommon, however, to find red, spongy tissue in areas which have been covered by dentures. This lesion is not always the result of an allergic phenomenon nor is it due to the increased food stagnation produced by the appliance, but it is possible that the lack of frictional stimulation may be the cause in certain patients.

Even when there are no pockets, removal of irritants to the gingival tissues does not always produce satisfactory improvement. It would appear that the reason for this may be insufficient frictional stimulation of the tissues, for when this is supplied there is often a very marked improvement in the gingival tone.

In malocclusion the natural friction obtained by food shedding is absent, whilst sometimes the alinement may be such that adequate gingival stimulation by either natural or artificial means is almost impossible.

Gingival Form.—Of fundamental importance in achieving adequate massage by any kind of gingival stimulation is the actual form of the gingival margins. The junction between tooth and gingiva must be as near knife edge as possible, the crevice being shallow and the gingival tissue sloping away uniformly. Attainment of this gingival relationship must be considered one of the principal objects of all periodontal therapy.

Treatment.—The rectification of abnormal degrees of gingival stimulation is once again occlusal equilibration by all available methods, attainment of a physiological gingival form, and adequate stimulation by the eating of fibrous foods and the use of a well-designed brush in a suitable manner.

SUMMARY AND CONCLUSIONS

The conception of a tooth and its periodontium is presented and discussed from both the embryological and physiological aspects.

The effect of functional stimuli on the deeper tissues of the periodontium is outlined.

The different lesions produced by accident trauma are stated and root repair is discussed.

Occlusal trauma is considered, and it is concluded that insufficient is known about the precise mode of action or the stage at which occlusal stresses may become injurious.

Lack of knowledge about excessive functional stresses prevents adequate assessment of the effects of impaired function which does not amount to disuse.

Nevertheless it is concluded that occlusal equilibration by all available means is justifiable therapy.

Knowledge of the role played by frictional stimulation of the superficial tissues is similarly uncertain.

The problem of differentiating between lack of friction and lack of hygiene is presented.

The extreme importance of a physiological gingival form is stressed.

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NOTES ON DENTAL RADIOGRAPHY

II. BITE-WINGS AND OCCLUSALS

By G. R. SEWARD, M.D.S. (Lond), F.D.S. R.C.S. (Eng.)

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(*Continued from page* 213)

BITE-WING RADIOGRAPHS

These give the best view of the crowns of the teeth. They can be produced for any part of the arch, but are of most use in the canine, premolar, and molar region. When taken for the incisor region it will be necessary to deal with each jaw separately if there is a great difference between the angle of the long axis of the upper and lower incisors. Indeed, there is not much advantage in bite-wing films over periapical views for this region, and most interstitial cavities, even early ones, can be detected by transilluminating light. In the premolar and molar region, however, many interstitial cavities will be missed, even extensive ones, if clinical examination only is relied upon (Horsnell, 1950).

In children bite-wing films are invaluable in detecting interproximal cavities while the teeth are saveable, and incidentally providing a "periapical" view of the deciduous teeth. For the latter purpose the technique has some

advantage both from a radiographical and a radiological point of view over normal periapical views.

Contrast-grade films should be used wherever possible. Approximately two films are needed for each side for the premolar and molar region. Long films covering many interproximal spaces do not give the best results, especially where normal cone distance is employed, as the diverging rays at the ends of the film cause distortion and overlapping of contact points. Even where the $1\frac{1}{4} \times 1\frac{5}{8}$ in. films are used, an 18–20 in. anode–film distance is advantageous, reducing the angle of divergence of the rays over the film area from 11° at 8 in., down to 5° (Simpson, 1928).

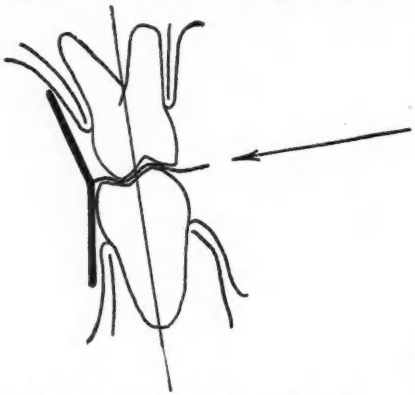

Fig. 1.—A diagram showing why the inclination of the teeth requires a vertical angle of +8° to +10° for bite-wing radiographs.

Technique.—The tube is given a vertical angulation of + 8° to + 10° and the central ray directed through the interproximal space under examination. The vertical angulation is necessitated by the orientation of the teeth on the curve of Monson and because the palatine part of the film is inclined more than the lingual (*Fig.* 1).

The interproximal spaces should be examined in the mouth before placing the film, and mentally grouped together into two or more groups of spaces which are parallel to one another. It will then be possible to decide which spaces will be shown on each film and the tube directed accordingly.

A finger laid horizontally in the buccal sulcus at right angles to the spaces to be radiographed enables one to position the tube case more easily (*see* p. 209). The spaces related to instanding and outstanding teeth will often need special attention. Even in well-formed arches the contact points of the upper molars should receive special attention. These are not uncommonly flattened and form oblique interproximal spaces (*Fig.* 2). A more mesial approach than normal is required for these cases.

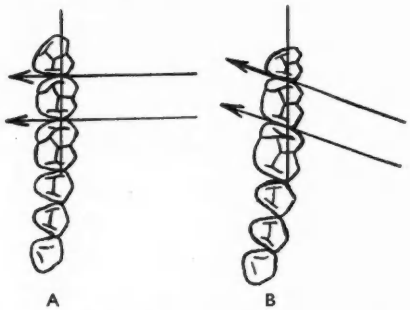

Fig. 2.—Illustrates the change to a more mesial approach necessary for bite-wing radiographs of upper molars which have oblique interproximal spaces. A, Horizontal angle for normal contact points; B, Horizontal angle for oblique interproximal spaces.

OCCLUSAL RADIOGRAPHS

Occlusal radiographs are those taken with the film in the occlusal plane. Some Scandinavian and American authorities use the term "cross-section" radiographs.

Occlusal views may be divided into true occlusals and oblique occlusals. In true occlusals the central ray is perpendicular to the occlusal plane. In oblique occlusals the rays are so angulated that a projection similar to the periapical projection is obtained, but a wider area is covered. The description "topographical radiograph" is applied to oblique occlusals by the Americans and is a term indicating their purpose.

True occlusal views can be divided into three kinds—those which are taken centrally to the arch, those laterally over one side of the arch, and those taken for certain teeth or areas.

A. THE LOWER JAW

1. Central True Occlusal of the Mandible.—An occlusal size ($2\frac{1}{4} \times 3$ in.) film packet, sensitive side downwards and with its long axis transversely, is passed into the mouth with a movement similar to that used in placing a lower impression tray. The patient's mouth should be only partly open to relax the cheeks and the film is worked back until its back edge is in contact with the soft tissues over the rami. It may be slipped farther back as the rami recede when the jaw is raised to hold the film.

The patient is asked to drop the head backwards onto the lowered head-rest and stretch the chin upwards. The central ray is directed through the midline of the floor of the mouth and perpendicular to the centre of the film.

2. Lateral True Occlusal of the Mandible.—An occlusal film packet is passed into the mouth with the sensitive side downwards and its long axis anteroposteriorly. With the patient's jaws almost closed it is pushed first backwards until its posterior margin is in contact with the soft tissues over the ramus and then sideways to stretch the cheek. The patient holds the film in this position with the teeth. The tube is centred under the first molar and at right angles to the film when viewed from the side; in the bucco-lingual direction the tube should have a slight lingual inclination along the long axis of the teeth, set on the curve of Monson.

3. Occlusal Views of Certain Teeth or Areas of the Lower Jaw.—

a. The Lower Third Molar.—

Method 1: A periapical size film packet, long axis anteroposteriorly and sensitive side downwards, is passed backwards and upwards behind the upper tuberosity and the patient allowed to close upon it.

The head is laid backwards and rotated sideways towards the opposite side, so that the ear of the opposite side lies on the head-rest. This throws the angle of the mandible on the side to be examined, upwards and forwards.

The central ray is directed along the long axis of the second molar. The mesiodistal inclination of this tooth is copied by the horizontal movement of the tube and the buccolingual inclination by the vertical movement of the tube. This latter inclination is obtained by directing the ray at the nasion (*Fig.* 3).

Method 2 (Technique described by Donovan, 1952): As the jaws are opened, the lower third molar travels downwards away from the upper third molar. A film placed across the

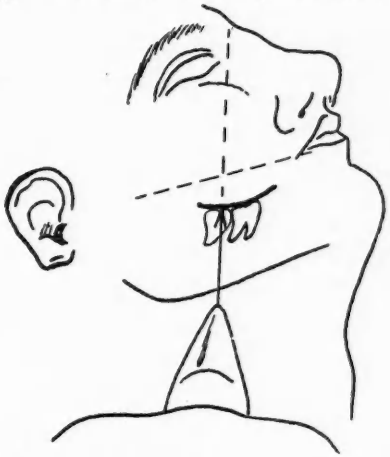

Fig. 3.—Shows the approach used for the first method of taking occlusal X-rays of lower third molars.

interval between the tuberosity and the lower molars lies relatively more distally to an occlusal projection of the lower third molar than the film in the closed-mouth technique. The film in this position also lies flatter than one curled up behind the tuberosity. Hence the open jaw position can be more favourable for occlusal views of this tooth. The exception is when the coronoid travels far enough forward in the cheek buccal to the tuberosity to prevent the film lying in the occlusal plane.

With the jaws open a periapical size film packet, long axis anteroposteriorly, is placed with its posterior margin behind the upper tuberosity and with its anterior margin resting on the occlusal surface of the lower teeth. The patient puts a finger against its anterior margin to prevent it slipping forwards and the patient's head is laid backwards and

sideways onto the opposite ear as in Method 1 above. The tube is angulated along the long axis of the second molar in a similar manner to that in Method 1, save that as the jaw is open the tube must be angulated more towards the mesial. The centring point will move towards the angle of the jaw. With the film placed diagonally from one jaw to the other, as in this method, the object–film

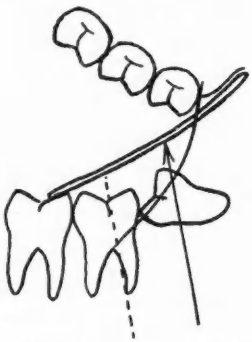

Fig. 4.—Shows the position of the film and the direction of the central ray for an occlusal of a lower third molar by the open-mouth technique.

distance is increased and therefore the anode–film distance must be increased (*Fig.* 4).

b. Occlusals for Submandibular Calculi.—Two occlusal views are necessary to demonstrate the whole of the duct system without superimposition.

The first view is taken as for the central true occlusal of the mandible, but only three-quarters of the normal exposure is given as the calculi may not be densely calcified. This will show calculi in the anterior part of Wharton's duct.

The second view is a posterior oblique occlusal of the floor of the mouth. An occlusal film packet, sensitive side downwards and long axis anteroposteriorly, is introduced into the mouth and passed back until its posterior margin is in contact with the soft tissues over the ramus. Its lateral border should be only just buccal to the molar teeth so that as much as possible of the film lies over the floor of the mouth. The patient's head is placed as for an occlusal of the lower wisdom tooth. The central ray is directed upwards and forwards from below the angle of the mandible and parallel to its inner surface. This will project a calculus in the submandibular gland or in the posterior part of Wharton's duct upwards and forwards onto the film (*Fig.* 5).

c. True Occlusal of the Lower Incisors.—An occlusal film packet is introduced in a similar manner to that for a central occlusal of the mandible, save that it is not pushed so far back. The central ray is directed at the lower border of the midline of the mental region of the mandible and along the long axis of the lower incisors. The lower lip may be turned down to enable the angle of the long axis of the lower incisors to be determined. This view enables the buccolingual relationship of buried teeth, etc., to be determined.

4. Oblique Occlusals or Topographical Radiographs of the Lower Jaw.—

a. Midline Oblique Occlusals.—An occlusal film packet is placed as for a central true occlusal of the mandible. The patient's head is positioned so that the occlusal plane is horizontal and the central ray is directed at the point of the chin at a vertical angle of $-45°$.

b. Lateral Oblique Occlusals.—An occlusal film is placed as for the second view for submandibular calculi. The patient's head is positioned so that the occlusal plane is horizontal. The vertical angulation is $-30°$. The centring point and horizontal angulation are as for a periapical view of the premolar and molar teeth.

The midline oblique occlusal is of considerable value for cysts, and fractured jaws, etc., but the lateral oblique occlusals are only of limited value, giving rather poor results.

c. Topographical View of the Lower Border of the Mental Region.—A view described by Hepple (1950).

An occlusal film packet, sensitive side upwards, is pressed up against the skin below the submental region. The central ray is directed downwards at an angle of $+65°$ at the midline of the lower incisor region.

B. THE UPPER JAW

The forehead part of the frontal bone throws a dense, unfavourable shadow across the maxilla if an occlusal radiograph of the maxilla

is taken with the central ray perpendicular to the centre of the arch. Hence two views are used, one in which the shadow of the forehead part of the frontal bone is thrown towards the back of the maxilla and one where this shadow is thrown in front of the maxilla. In the first of these two views, the standard true occlusal of the maxilla, the region is radiographed without bony superimposition. In the second it is viewed through the bones of the vault of the skull. This latter view, the vertex true occlusal, provides an axial view of the upper incisors and is of great value in determining the relationship of buried teeth to those in the arch.

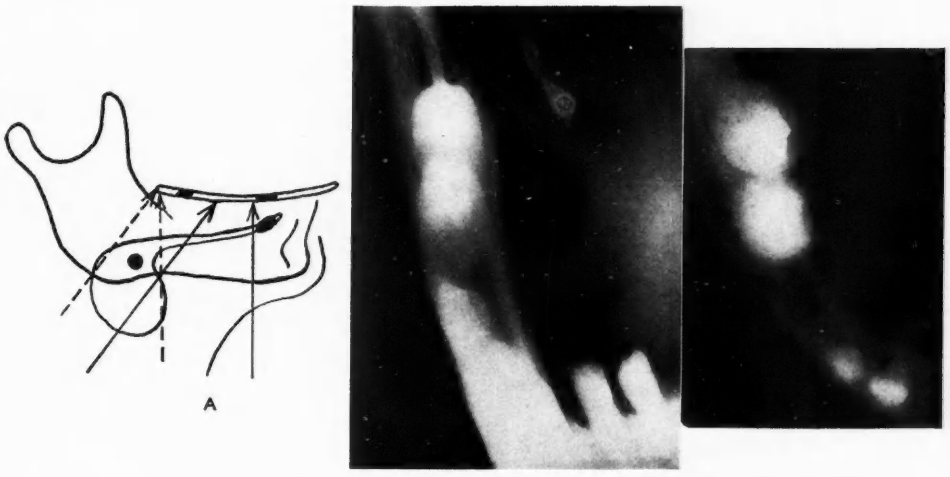

Fig. 5.—A, Shows how a calculus in the submandibular salivary gland may be projected onto an occlusal film in the mouth. B, Radiographs taken of a case with a calculus in the gland: on the right the true occlusal fails to show the calculus; on the left the posterior oblique occlusal demonstrates it.

1. The Standard True Occlusal of the Maxilla.—The two limiting factors in this view are (1) the frontal bone shadow, and (2) soft tissues over the rami of the mandible, preventing the film from being passed farther back in the mouth. If the central ray is directed as near to perpendicular as possible without throwing the frontal bone shadow across the film, then it will be parallel to a line joining the frontal bone and the posterior edge of the film.

The technique then follows: The patient's head is positioned so that the zygomatic process of the frontal bone (*Fig.* 6 A) is vertically over the anterior margin of the ramus of the mandible, as palpated through the cheek (*Fig.* 6 B). A $2\frac{1}{4} \times 3$ in. size film packet, long axis transversely and sensitive side upwards, is passed into the partly closed mouth. It is worked backwards until in contact with the soft tissues over the rami. It may be passed farther backwards as the rami recede when the patient closes to hold the film. The central ray is directed perpendicularly through the bridge of the nose. The resulting radiograph should show the middle of the supra-orbital ridge as a narrow, dense, arc-shaped shadow along the posterior border of the film (*Fig.* 6).

2. The Vertex True Occlusal.—A screen sensitive film in an occlusal cassette with two intensifying screens should be used for this view. This will reduce the exposure to one-fifth of that needed for wrapped film. The cassette is placed in the mouth in a similar position to that used for the film in the standard true occlusal view. If the patient has

a small mouth it may be necessary to place the cassette with its long axis anteroposteriorly. It should be rather more forward than the film position for the standard occlusal, as the maxilla will be projected slightly forwards. The cassette should be enclosed in a fresh cellophane envelope before inserting it into the patient's mouth.

4. Occlusal Views of Certain Teeth or Areas of the Upper Jaw.—

The Upper Third Molar.—A view suitable for use in the surgery of upper third molars may be taken as follows: A periapical size film packet is placed in a similar position to that used for an occlusal of a lower wisdom, with its posterior margin tucked up behind the tuberosity. The sensitive side of the packet faces upwards. The central ray is directed slightly backwards and slightly outwards at the centre of the infra-orbital margin of the same side as the tooth.

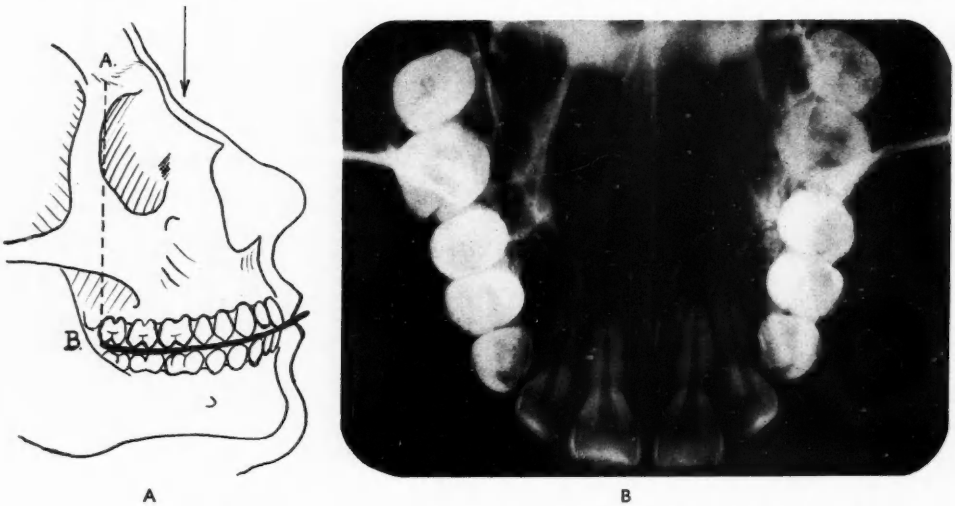

Fig. 6.—**A**, Shows how a standard true occlusa radiograph may be made by directing the central ray parallel to a line joining the zygomatic process of the frontal bone (A) and the anterior margin of the tissues over the ramus of the mandible (B). **B**, The radiograph resulting from this technique.

The patient's head is orientated so that the ala-tragal line is parallel to the ground, then the central ray is directed downwards and forwards through the vertex of the skull at an angle of 10–15° from the vertical. By drawing back the upper lip and inspecting the upper incisors, the angle of the tube can be adjusted so that the central ray will be parallel to their long axes (*Fig.* 7).

3. Lateral True Occlusal of the Maxilla.— The film is placed in the mouth in a similar manner to that employed for the lateral true occlusal of the mandible, save that the sensitive side faces upwards. The head is orientated as for the standard true occlusal. The tube is centred over the maxillary sinus of the side to be radiographed and the central ray directed vertically downwards.

This method is as near to a true occlusal as can be obtained in this region without superimposition of thick bony structures. If a view with the central ray more accurately along the axes of the teeth is desired, an occlusal cassette should be used as the tube must be centred over the frontal bone of the side examined.

5. Oblique Occlusals or Topographical Radiographs of the Maxilla.—

a. Midline Oblique Occlusals.—The head is positioned with the ala-tragal line horizontal.

The film packet is placed with the long axis transversely and the central ray is directed

at a vertical angle of + 65° at the tip of the nose.

In the horizontal plane the ray is at right angles to the coronal plane.

b. Lateral Oblique Occlusals.—The head is positioned as in (*a*) above. The film packet is placed with its long axis anteroposteriorly and with its outer margin only just buccal to the teeth to be radiographed. The vertical angulation is + 60°. The horizontal angle is the same as for the periapical view of the region concerned, for example about 45° to the saggital plane for the canine region, about 90° for the upper first molar region. The centring point should be higher than for periapical views, e.g., near the inner canthus of the eye for the canine.

c. Posterior Oblique Occlusal.—An oblique view of the tuberosity, pterygoid fossa, and anterior part of the zygomatic arch may be obtained in the following manner: An occlusal film is positioned in the mouth in a similar manner to that for a lateral true occlusal of the maxilla. The central ray is directed downwards and forwards, parallel to the bony, medial wall of the temporal fossa. The tube is angulated at + 65° and it is centred above the zygomatic arch and behind the frontal process of the zygoma.

d. A Topographical Survey of the Maxilla.—Townend (1950) suggested the following method of obtaining an oblique occlusal view of both sides of the maxilla on one film. A $2\frac{1}{4} \times 3$ in. film packet is folded in half along its short axis, with the sensitive side outwards. This produces a sandwich $2\frac{1}{4} \times 1\frac{1}{2}$ in. with two thicknesses of tin-lead foil in between the folded halves of the film which will protect one side while the other is irradiated. If the film packet is marked R and L heavily in pencil on the sensitive side, these marks will be radiographed on to the film. The packet should be placed in the mouth with the $1\frac{1}{2}$ in. dimension across the arch, the folded margin away from the tube and the other $2\frac{1}{4}$ in. margin not more than $\frac{1}{8}$ in. buccal to the teeth to be radiographed. One side is exposed, the film turned over and replaced in the mouth, and the other side exposed.

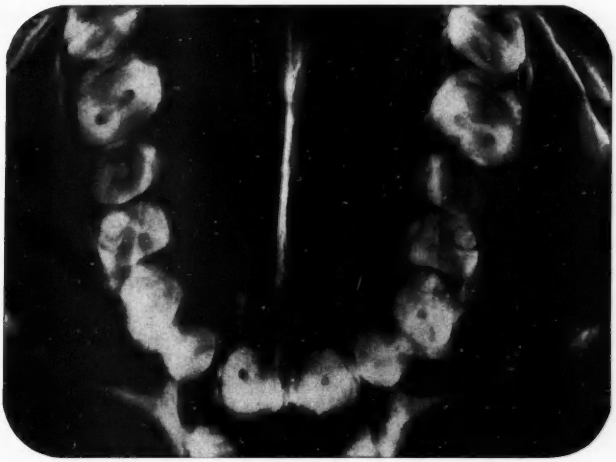

Fig. 7.—A vertex occlusal radiograph.

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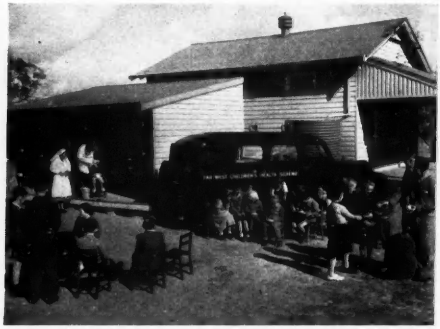
DENTAL SERVICE IN THE COMMONWEALTH

THE FAR WEST CHILDREN'S HEALTH SCHEME IN THE AUSTRALIAN OUTBACK

By **MARJORIE THOMSON**
Photographs by **W. BRINDLE**

THE Australian outback is a vast sparsely populated area covering thousands of square miles. It is obviously quite impossible for the hundreds of isolated communities to travel long distances for routine dental treatment.

Dr. Wearn riding in a drover's rig to attend one of the drovers.



Operating in the shelter shed at Collie school.

The only solution is for the dental surgeon to go to the patients. With this in mind the Far West Children's Health Scheme send out a mobile clinic each year.

The visiting dentist is Dr. Walter Wearn, who is also treasurer of the scheme. He has been associated with the scheme since its inception in 1924 by the late Stanley Drummond, who aimed to bring medical and dental care and amenities to people in the outback of New South Wales.

The Far West Children's Health Scheme now undertakes regular dental, cripple, and medical surveys in the outback, and conducts a convalescent hospital and holiday home at oceanside Manly, near Sydney. It also operates a mobile baby clinic in the central west, four railcar baby clinics in the north-west and west, and two permanent baby clinics in far western towns. The scheme is financed by voluntary contributions, mostly from country folk.

Dr. Wearn began his yearly dental tours in 1947. Since then he has spent three to four weeks a year touring the north-west and western parts of the State that have no doctor or dentist in the district.

He is usually accompanied by his wife, who acts as dental nurse, and by the secretary of the Far West Scheme. He arranges his itinerary so that he visits the towns every two years and he does not call at any town where there is a dentist within 20 miles.

This year Dr. Wearn made the trip in a specially built station wagon. In previous years he made the tour in a sedan car. John Ness, the secretary of the Far West Scheme, drove the station wagon and acted as dental "offsider", keeping the primus sterilizers going and rounding up the child patients.

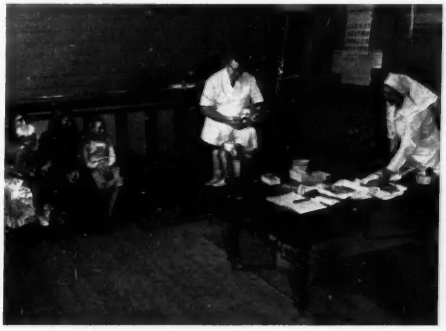
The dental clinic set off in July for the west, with the dental gear stowed in the back of the station wagon. This included a pedal drill, an adjustable headrest, enamelled basins and buckets, two primus stoves, and a boiler for

sterilizing equipment. The stoves did double duty for cooking wayside meals. Spades and tow ropes were also included in case the wagon became bogged.

Sacks of tennis and cricket balls donated by various sporting goods firms, and cases of oranges, are always an important part of the dental equipment. The balls and oranges are the children's "come-on" or reward for letting the dentist attend to their teeth.

During the three weeks' tour the clinic travelled 2000 miles, visited 21 small towns and settlements, and attended to 795 children and 15 adult patients. In several places the Far West dentist provided the only dental attention for more than fifty years.

The first volunteer at Carinda school, watched by his schoolmates.



The courthouse at Angledool, the setting for the dental surgery.

Most of the patients examined were children of farm-hands, shearers, fencers, saw-mill workers, timber cutters, and railway workers. Few of the families owned a car. Usually the nearest dentist was more than 40 miles away, in a railway town, so there was not much chance of getting dental attention.

The dentist found that only 112 of those examined had good teeth that did not need attention or had been attended to. Thirteen children refused to let him look at their teeth.

Of the 670 children needing dental attention, Dr. Wearn found that most of them had teeth that were so far gone that there was no alternative but to extract them. 1604 teeth were extracted and 333 filled for children aged from 5 to 15.

The lack of fresh milk and green vegetables is a problem in the outback, due mainly to the low rainfall, but also occasionally to the apathy of parents who find it too much trouble to keep a cow or grow their own vegetables. In most cases powdered milk or sweetened condensed milk is used. Fresh fruit and vegetables have to be brought by rail from centres sometimes up to 300 miles away.

The parents of the children earn good wages, with the result that there is ample money to spend on chocolates, sweets, cakes, and fancy biscuits. This, coupled with a badly-balanced home diet, plays havoc with the children's teeth.

One young child of 5 had 18 teeth extracted this year. Her three-year-old sister had all her baby teeth removed.

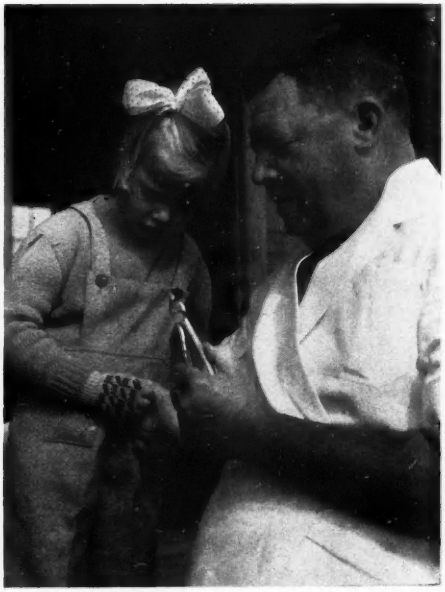
An example that prosperity has had a detrimental effect on people's eating habits was shown by a family of six children brought in to the dental clinic by their father.

The family lives in an isolated section of the west, not far from the Queensland border. The father is a well-to-do farmer with a sheep and wheat selection, which he settled on about eighteen years ago. The three eldest children, aged from 13 to 16, had excellent teeth; the three younger ones, aged from 4 to 10, had poor teeth that needed a lot of attention.

The farmer told the dentist that he had started farming in the near-depression days of the mid 1930's. Things had been tough. He

had not been able to afford luxuries, and trips to town were few and far between. He and his wife had grown almost everything they ate, and there had been no money for sweets or fancy biscuits. But, he said proudly, it was a different story now. He could afford luxuries and his younger children were getting all the

The dental surgery set up in the local dance hall at Pokataroo. The father of the small patient is using the little boy's pet as a decoy.



Clutching her tennis-ball reward, a young patient is interested to see the cause of her toothache.

things the older children had been denied. Every time he went to town he took home several pounds of chocolates and tins of sweets, they bought fancy biscuits by the 10-lb. tin, and there was always plenty of ice-cream, cakes, and cordials in the house.

The younger children were paying for the soft living and carbohydrate diet with their teeth, but the indulgent parents could not be convinced that the unnecessary luxury items were responsible for the dental decay.

In Pilliga, a little place tucked away 70 miles from the nearest sizeable town, a third of the 500 people are of aboriginal lineage. They work on the wheat, sheep, and fat-lamb grazing properties or in the sawmills around the districts, and have adopted the white man's diet. The dental clinic attended to 39 children in Pilliga, most of them coloured. Their teeth were in such a bad condition that 197 were extracted and only 7 teeth filled. This was the highest number of extractions, an average of 5 extractions for each child attended to. A sad commentary on our diet and eating habits, and proof that a European diet is responsible for dental caries.

The Far West dentist set up his surgery in schoolrooms, wherever one was available, but sometimes there was no schoolhouse. The clinic then was held in all sorts of odd places.

In Angeldool, a tiny hamlet with less than a dozen houses and 62 miles from the nearest town, the dentist set up his quarters in the local courthouse.

The children waited on the court orderly's bench in front of the magistrate's rostrum, and the dentist operated in the witness box with pictures of "wanted" men on the wall behind. It was a grim atmosphere for the young ones

to have their first introduction to the dental drill and forceps, but a couple of tennis and cricket balls did the trick and allayed fears.

In another tiny hamlet in the north-west the clinic was set up in a dance hall, the only public building in the place.

In several places Dr. Wearn was the first dentist to call. In other small towns he was the only dentist to visit the town in twenty-six years, and in yet another place, since 1900. This has decided the Far West Scheme to try at least two trips a year in the future. The difficulty is to get dentists who are willing to give up their practices for several weeks a year to do the trip. Dr. Wearn has had young dentists accompany him on a few trips, but, though they were enthusiastic, they were not speedy enough to cope with the enormous amount of work to be done in one day.

A leading ear, nose, and throat specialist also accompanied the dental party during a portion of the tour this year.

The dental tour had its humorous side. In one town a 10-year-old aboriginal girl was enticed into the dental chair three times. When the dentist turned to get his instruments she would spring out of the chair and sprint for the nearest tree. She was still up the tree when the clinic left town.

A goods train was held up at a small siding while the dentist extracted some teeth for the engine driver, who had seen the clinic wagon driving along near the single track and had whistled them to a halt.

In another town the baker's wife asked the dentist if he could attend to her husband, who was nearly frantic with toothache. The baker couldn't leave the dough, the mix was rising, so the dentist went around to the bakehouse. It didn't take him long to relieve the baker's agony—and the bread was ready on time.

Nothing is too good for the Far West workers, say residents of this outback area. One old-age pensioner in Collarenebri, a north-western town of 500 people on the Barwon River, always presents the two clinic sisters who operate the Far West travelling baby clinic with fresh Murray cod, when they visit the town. When the old fellow heard the Far West dental clinic was in town he sent the local hotelkeeper three Murray cod, with strict instructions that they were to be served only to the dentist's party.

The first stop on the dental tour in 1953 was at Lightning Ridge, a famous Australian opal field, but populated by only a handful of people. The children pressed opals on the party in return for dental attention, but two old opal miners, aged 80 and 72, with hardly a tooth between them, declared they didn't "hold with dentists".

But the Far West Scheme of New South Wales not only "holds with" dentists, but is planning to increase this service.

DIRECT-FILLING RESINS: DIMENSIONAL CHANGES RESULTING FROM POLYMERIZATION SHRINKAGE AND WATER SORPTION

THE dimensional change of the direct-filling resins during polymerization and water sorption was measured. Polymerization shrinkage was measured in a specially constructed dilatometer based on mercury displacement. The direct-filling resins shrink from 6 to 8 per cent in volume as they harden or polymerize in the cavity when replaced by the pressure technique. This shrinkage amounts to from 3 to 4 times the shrinkage of a silicate cement measured by the same method.

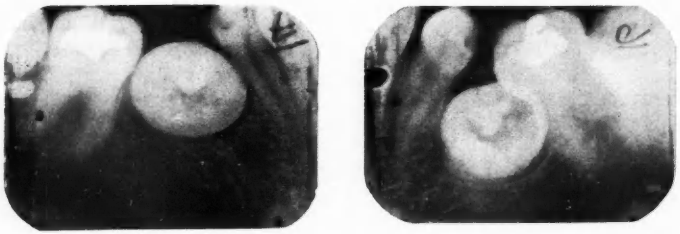
The expansion resulting from water sorption was measured linearly by the use of reference lines on thin disks. Strain in the disks was removed by annealing prior to making measurements.

The presence of strain makes a linear measurement unpredictable, since the plasticizing action of the water releases the strain and may cause an apparent contraction because of the change in the shape of the specimen. When linear values which were obtained on the annealed specimens were converted to volume units, this study showed that the direct-filling resins expanded from 1·0 to 1·5 per cent in volume as a result of water sorption.—SMITH, D. L., and SCHOONOVER, I. C. (1953), *J. Amer. dent. Ass.*, **46**, 540.

BILATERAL DILATED COMPOSITE ODONTOMATA

By **WILLIAM G. BROWNE**, F.D.S. (Edin.), H.D.D.

NOWADAYS many American writers do not differentiate between this type of odontome and the gestant type. In Britain, Rushton (1937) takes a similar view.



A B

Fig. 1.—Intra-oral radiographs showing a dilated odontome in each side of the mandible. A, Right side ; B, Left side.

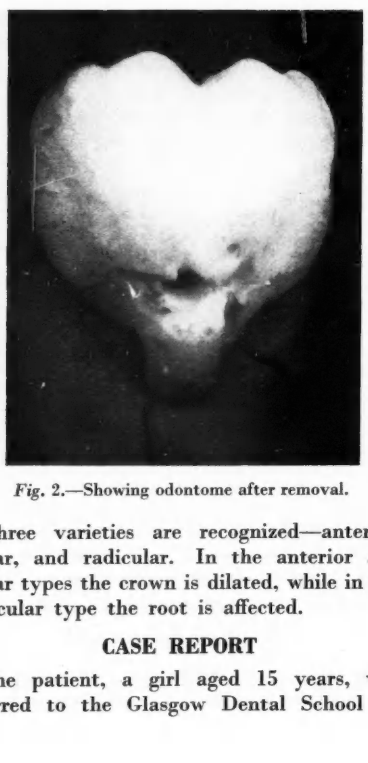


Fig. 2.—Showing odontome after removal.

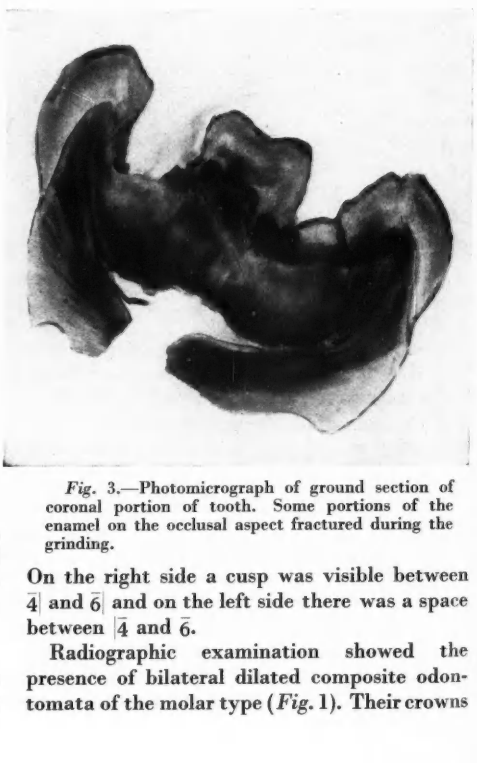


Fig. 3.—Photomicrograph of ground section of coronal portion of tooth. Some portions of the enamel on the occlusal aspect fractured during the grinding.

Three varieties are recognized—anterior, molar, and radicular. In the anterior and molar types the crown is dilated, while in the radicular type the root is affected.

CASE REPORT

The patient, a girl aged 15 years, was referred to the Glasgow Dental School on Oct. 16, 1950, for orthodontic treatment or removal of unerupted $\overline{5}|\overline{5}$. Clinical examination showed that the correct complement of teeth were present except in the region of $\overline{5}|\overline{5}$. On the right side a cusp was visible between $\overline{4}|$ and $\overline{6}|$ and on the left side there was a space between $|\overline{4}$ and $\overline{6}$.

Radiographic examination showed the presence of bilateral dilated composite odontomata of the molar type (*Fig.* 1). Their crowns

were in linguoversion. The third molars were present.

It was decided to remove the odontome from the right jaw as it was partly erupted. As there was a layer of bone covering the one on the left it was decided to leave it meanwhile.

Under regional anæsthesia surgical removal was carried out on March 21, 1951. Owing to the very large pulp chamber the tooth fractured during removal. (The sutures were removed on fifth post-operative day.)

On examination the crown and root were seen to be dilated. The root finished in a small fragile hook (*Fig.* 2).

Histo-pathological Examination. — Ground section of the crown revealed no gross abnormality in structure of the dental tissues (*Fig.* 3).

Acknowledgements are due to Mr. John A. Orr, Consultant Dental Surgeon, for permission to publish the case; and to Mr. Henry Noble, H.D.D., L.D.S., for the photomicrograph.

REFERENCE

RUSHTON, M. A. (1937), *Brit. dent. J.*, **62**, 65.

PARLIAMENTARY NEWS

ARMY DENTAL OFFICERS

During the all-night debate in the House of Commons on the Army Estimates, Mr. John Baird (Lab., Wolverhampton, N.E.) said the Memorandum dealt with the failure to get medical and dental officers.

The Secretary of State (Mr. Head) had set up a committee under Lord Waverley to inquire into the matter.

There was the same type of trouble in the Army as in the School Dental Service, because we could not afford to pay the medical and dental officers more than equivalent ranks in the same type of service, and, therefore, we could not attract the right type of people into these services. We could not offer sufficient inducement.

"Speaking as a dental officer, I say that if we give dentists and doctors better accommodation, we might attract more decent medical men into the Services", he said, adding that he was not in any way disparaging the Army Medical and Dental Services.

"I cannot understand why we should have three military medical and dental services. Why cannot we have a unified medical service for all the Armed Forces?" he asked.

"Apart from that I believe that to-day, as a result of the National Health Service there is no reason for having an elaborate medical service in the Army. The ordinary National Hospital Service and Health Service could do a large amount of the work now being done by medical personnel in the Army. It is true that we should still need a medical service for overseas, but a large amount of the medical work of the Army's hospital and dental services could be done under general medical and dental services and in that way we should save on personnel", stated Mr. Baird. (*T.*, *March* 16.)

LETTER TO THE EDITOR

Anæsthetist's Responsibility

March 14, 1954.

Dear Sir,

As a subscriber I have read with considerable interest the December, 1953, issue, page 128. Your report on a Ministry decision that the dentist who employs an anæsthetist will not be responsible for his failings, seems to me of paramount importance. In the past dentists have been told that it is their duty to choose a competent anæsthetist since *they* will be liable to prosecution if anything goes wrong with the anæsthesia.

I submit that your Journal has rendered a great service to the Profession at large by giving publicity to this ministerial ruling which does away with a widely held interpretation of the law which I for one have always thought unfair and unjustified.

Yours faithfully,

5, *Bladud Buildings*, F. G. SALOMON.
Bath.

SALON DES MEDECINS, DENTISTES, PHARMACIENS ET VETERINAIRES

BRITISH PROFESSIONAL CONTRIBUTION

THE Twenty-sixth Exhibition of Paintings by doctors, dentists, pharmacists and veterinary surgeons was held in Paris between March 7 and 21, 1954, at the Musée d'Art Moderne. It was opened by Monsieur Paul Coste Floret, Minister of Public Health, who was received by Doctor Lucien Marceron, President of the Salon, Doctor P. B. Malet, the organizer, Madame Malet, the Secretary, Mr. Harvey Wood, President of the British Council and representing the British Ambassador, and Mr. G. R. Toogood, Ph.C., the organizer of the British Section.

Don Quixote.

(*Photo Universal*)

A record number of nearly 3,000 visitors were present at the ceremony to view the 500 works of art which were explained and listed in a beautiful de luxe catalogue subsidized by the leading French laboratories.

The British exhibit included twenty-seven very fine paintings and sketches, etc., and was

representative of the whole professions present: doctors 15 pictures, dentists 2, surgeons 1, pharmacists 6, veterinary surgeons 3. This was the first time that all five professions of each country have had an opportunity to compare each other's works. In view of this fact, the Radiodiffusion-Télévision-Française acceded to a request and the ceremony formed part of the programme on Monday, March 8 in the "Journal Parlé" and "TéléParis".

In his address to the Minister, Dr. Marceron said that he felt like an inmate of a mental hospital designated by the director to receive a civic dignitary and that in this atomic age, explosions could happen anywhere and at any moment. This Salon, he said, was the result of a mental explosion of professional minds which were perpetually harassed with daily worries—ever increasing: thus the "bang" explosion in the form of paintings on view.

Replying, the Minister said that in this year of grace, 1954, in a full atomic age, the Minister of Public Health opens the Twenty-sixth Salon des Médecins, and that in being presented to him in the speech of welcome, as the sign of an explosion, it is certainly much more than one of these modern parallelisms which so often upset the mental equilibrium. "However," continued the Minister, "I am of a firm belief that that is good for doctors, dentists, chemists, and veterinary surgeons to show their patients—and others—by means of paintings, the prestige of their culture and the way their minds find—like Ingres' violin—a necessary relaxation."

Mr. Toogood thanked the Minister on behalf of those in England who had contributed to the Salon and the Committee for the warm welcome they had given his colleagues. "This Salon," he said, "had shown to the public one of the unknown talents that these professional persons possessed." It should be noted that the British exhibit was not an officially organized one, but a simple response to a communication published a few weeks ago in professional periodicals.

The British dental profession was represented at the Salon by Mr. L. Pohl, L.D.S. R.C.S., who sent a symphony of two very attractive sketches, "Portrait of Boznian Peasant, 1938".

French dentists contributed some very modern works, one in particular representing two molars in the grip of the forceps and entitled "Don Quichotte".

NATIONAL HEALTH SERVICE NOTES

The National Health Service (Executive Councils) Regulations, 1954

REGULATIONS have been made by the Minister of Health consolidating the following National Health Service (Executive Councils) Regulations:—

The National Health Service (Executive Councils) Regulations 1947 (S.R. & O., 1947, No. 889); Amendment Regulations 1948 (S.I., 1948, No. 1156); Amendment Regulations 1949 (S.I., 1949, No. 1120); Amendment (No. 2) Regulations 1949 (S.I., 1949, No. 2447); Amendment Regulations 1951 (S.I., 1951, No. 1696).

The new Regulations are the National Health Service (Executive Councils) Regulations 1954 (S.I., 1954, No. 224) which came into force on March 15, 1954.

These Regulations are a consolidation of the Regulations mentioned above, with a few amendments mainly of a purely drafting nature and the omission of portions of the Regulations which are now spent. Amendments covering new subject-matter include in particular:—

Regulation 14 (2). Power has been given to the Executive Council to extend the period of service of their officers, other than the Clerk, between the ages of 65 and 70 without the requirement of the existence of exceptional circumstances and without the Minister's consent. The Minister's consent will still be necessary, however, in respect of any extension of the Clerk's services beyond the age of 65 years.

Regulation 22 (3) (a) (vii). The provisions of Regulation 19 (2) (a) (vii) of the National Health Service (Executive Councils) Regulations, 1947 (S.R. & O., 1947, No. 889) have been adapted to allow for the incorporation of the Institute of Chemists–Opticians in the Institute of Optical Science.

Amendments to the Handbook for Executive Councils will be completed as soon as possible.

SOCIETY NOTES

CONGRÈS INTERNATIONAL DE SCIENCE DENTAIRE

UNDER the auspices of the Belgian Universities Dentists Association, the Congrès International de Science Dentaire will be held at the Casino d'Albert-Plage, Knocke-sur-Mer, from Wednesday, May 26, to Monday, May 31, 1954, to mark the Twenty-fifth Anniversary of the establishment of the academic degree of "Licencie en Science Dentaire", and the Twentieth Anniversary of the Association.

The programme has been planned to include scientific lectures by eminent dentists from many European countries and from the U.S.A., together with attractive social activities; and a special programme is provided for the ladies attending.

Full details and application forms may be obtained from the Secretary of the Congress, 141, Avenue Carton de Wiart, Bruxelles.

CONTINENTAL DENTAL SOCIETY

Programme of Spring Meeting, 1954

Friday, *April* 30, 1954.—"At Home". Clinical Meetings will be held as follows:—

2.30—4.30 p.m., Dr. George G. Exner, F.D.S., M.R.C.S., L.R.C.P., at 26, Broadwick Street, W.1: "Minor Oral Surgery".

2.30, 3.30, 4.30, and 5.30 p.m., Mr. H. G. Orlay, L.D.S., F.D.S., at 61, Kilburn High Road, N.W.6: "Root Treatment in General Practice". (Four members only each Session.)

2.30 and 4.30 p.m., Mr. M. Walter, D.M.D., at 43, Wimpole Street, London, W.1: "Gingivectomy and Partial Dentures indicated in Paradontal Disease".

4.30 p.m., Mr. K. G. Wongtschowski, D.M.D., at 49, Wimpole Street, London, W.1: "Orthodontic Therapeutical Approach demonstrated on Patients".

Saturday, *May* 1, 1954, at the Eastman Dental Hospital, Gray's Inn Road, W.C.1.—

10 a.m., Mr. Ivor R. H. Kramer, L.D.S. R.C.S., "Antibiotics in Dental Practice".

11.30 a.m., Dr. E. Lipman Cohen, M.B., B.Chir., M.R.C.S., L.R.C.P.: "Allergy".

2.15 p.m., Mr. H. J. Turkheim, D.M.D.: "Detailed Interpretation of Dental Radiographs".

7 p.m., Reception and Dinner at the Carlisle Banqueting Suite, Cumberland Hotel, Marble Arch, W.1.

Sunday, *May* 2, 1954, at the Cora Hotel, Upper Woburn Place, W.C.1.—

10 a.m.—1 p.m., Table Demonstrations.

2—5 p.m., Exhibition of Members' Hobbies. Members' families and friends are welcomed.

Admission tickets for members and guests for all meetings obtainable from E. J. Magnus, 736, Kenton Road, Kenton, Harrow, Mdx.

INSTITUTE OF BRITISH SURGICAL TECHNICIANS (INC.)

THE lecture by Mr. L. H. Johnson on "The Use and Construction of Orthodontic Appliances" at the Eastman Dental Hospital on Feb. 23, 1954, attracted a large audience.

Mr. Johnson, who is Senior Technician in charge of Orthodontics at the Eastman Dental Hospital, advocated the use of the Adams' clasp or crib in view of its retentive ability and indicated that although other types of appliances, such as Jackson's crib, the arrowhead, Visick spur, and the half-round clasp had their uses in orthodontics, they had certain disadvantages.

The lecturer dealt with a number of questions put to him at the end of the lecture, and after an expression of thanks to Mr. Johnson by the Chairman, many inspected the wide range of specimens of orthodontic work displayed on the table.

DENTAL BOARD OF THE UNITED KINGDOM

CATALOGUE OF FILMS

THE following films have recently been added to the Board's Library. Applications for the hire of these, and of the American films listed below, should be made to the Director of the Dental Post-Graduate Bureau, 44, Hallam Street, London, W.1.

PR.17.—*Full Denture Construction* (Professor Matthews, Manchester); 35 minutes; 16 mm.; black and white; silent.

This film deals with all the stages in full denture construction, employing plaster bite rims which are ground into the patient's own occlusal curvature plane. The templates so developed are used for setting up the teeth, thus ensuring a balanced articulation in the finished dentures. The use of soft resin inserts is illustrated.

OS.9.—*Immediate Root Resection* (Dr. Louis Grossman, Philadelphia); 35 minutes; 16 mm.; colour; silent.

This film illustrates a method of root-canal therapy, in which the canal is cleansed, enlarged, irrigated, sterilized by electrolytic medication, filled and then the root is resected, all in one hour.

CD.17.—*Polyantibiotic Treatment of a Pulpless Tooth* (Dr. Louis Grossman, Philadelphia); 35 minutes; 16 mm.; colour; silent.

This film gives a detailed treatment of the root canal of a pulpless tooth showing an area of rarefaction 6 mm. in diameter.

CD.18.—*A Method of Mixing Silicate Cement* (National Bureau of Standards, U.S.A.); 10 minutes; 16 mm.; colour; sound.

Films obtainable through the American Embassy

Complicated Exodontia: Introduction. 650 ft.; 18 minutes; colour; sound.

This film shows by means of models and shots in the mouth various methods whereby the extraction of teeth, which are impacted or have exostosed roots, etc., may be facilitated.

Factors in Construction of Full Maxillary and Mandibular Dentures. 1620 ft.; 45 minutes; colour; sound.

A full illustration and description of a technique for the construction of full dentures from first impression to finished dentures.

Root Canal Therapy: Endodontia. 936 ft.; 26 minutes; colour; sound.

The film shows the treatment of infected pulpless tooth partly by views taken in the mouth and partly by means of a sectioned extracted tooth. Both antiseptic treatment and Ionic medication are shown.

Dental Assistants. 720 ft.; 20 minutes; colour; sound.

The film shows a dental surgeon working in a children's clinic with the help of two dental surgery assistants. It illustrates well the duties of the assistant and shows that with such assistance the dental surgeons can work more efficiently and accomplish very much more in a given time.

Partial Dentures: Biomechanics. 600 ft.; 18 minutes; colour; sound.

A good film illustrating some of the basic principles of partial denture design.

Intermaxillary Multiple Loop Wiring in Treatment of Jaw Fracture. 950 ft.; 28 minutes; colour; sound.

A good film clearly illustrating a technique for any number of wire loops with one continuous piece of wire.

Periodontia. 700 ft.; 18 minutes; colour; sound.

The technique of surgical gingivectomy with the knife is well illustrated. The procedure of packing and after-treatment would not be universally acceptable.

Dental Alveolar-surgical Excision of Periapical Infection. 300 ft.; 8 minutes; colour; sound.

The film shows the removal of the four lower incisors which have periapical infection and are the cause of a sinus on the chin. A large mucous periosteal flap is turned back, three teeth are removed with forceps, one root after bone removal, and a small cyst in connexion with one of the apices through a small window in the bone. The socket margins are trimmed with nibbling forceps and the flap replaced and secured with interrupted sutures.

Topical Fluorides: Multiple Chair Procedure. 550 ft.; 16 minutes; colour; sound.

A rapid technique for isolation of teeth and application of 2 per cent sodium fluoride solution demonstrated by a hygienist. The teeth are not cleaned before the first application.

Operative Dentistry: Part 1, Rubber Dam. 400 ft.; 11 minutes; colour; sound.

Describes the application of rubber dam for teeth in the several regions of the mouth. The advantages of using the rubber dam are mentioned.

Operative Dentistry: Part 2, Preparation of Cavity. 400 ft.; 10 minutes; colour; sound.

Preparation of an M.O.D. cavity for amalgam. Trimming of enamel, etc., use of rubber dam.

Operative Dentistry: Part 3, Matrix. 360 ft.; 10 minutes; colour; sound.

Illustrates a method of matrix formation for amalgam fillings, employing stainless steel sheet, wedges and impression compound. A very good illustration of an alternative method to the conventional steel band in a holder.

Operative Dentistry: Part 4, Amalgam Restoration. 500 ft.; 14 minutes; colour; sound.

Illustrates the preparation of amalgam using a mechanical mixer. The insulation and cauterization, the final carving and subsequent polishing of the filling.

Intra-oral Pharyngeal Structures. 850 ft.; 22 minutes; colour; sound.

Shows patient after removal of chondrosarcoma of left maxilla. Movements of soft palate, tongue, and posterior pharyngeal wall clearly shown in swallowing, chewing, and speech.

Plastic Impression Materials in Crown and Inlay Prosthesis. 1000 ft.; 28 minutes; colour; sound.

Describes the use of alginate base impression materials for bridges and multiple inlays.

"Conscience is never dilatory in her warnings."—OLD PROVERB.

BOOK REVIEWS

NOYES' ORAL HISTOLOGY AND EMBRYOLOGY. Edited and revised by ISAAC SCHOUR, B.S., D.D.S., M.S., Ph.D., Sc.D., Professor of Histology, College of Dentistry, University of Illinois. 7th edition. $6\frac{1}{8} \times 9\frac{1}{8}$ in. Pp. 448, with 290 illustrations and 18 plates. 1953. London: Henry Kimpton. 60s.

THIS is a revised edition of the well-known text-book and Schour has acknowledged the original author by incorporating his name in the title of the book. The new edition contains five extra pages, a few extra figures, but two less coloured plates. The most striking feature about the book is its price—the last edition was 37s. 6d. There has been no change in the chapter headings, but some modifications in the text in accordance with modern work have been made. The reviewer feels that the text and illustrations on dental and oral histology could with advantage be expanded at the expense of three chapters dealing with dental caries, operative dentistry, and directions for laboratory work. The latter is best left to the requirements of the class and the methods of the lecturer, whilst the former are better dealt with in books on operative procedures. The chapter on comparative dental histology could be enlarged to include, amongst other things, a more detailed account of the development and structure of the teeth and oral structures of experimental animals. Whilst such an inclusion might be beyond the requirements of undergraduates, it would provide a short introduction to the young demonstrator or research worker.

There are a number of points which might be dealt with more clearly. In Chapter 6, the inter-rod substance is described on one page as being richer in organic substance than the rest of the enamel and on another as being more readily soluble in dilute acids. In Chapter 8, the Tomes' fibres are illustrated surrounded by what the caption describes as a lymph space but the text refers to as an artefact.

Schour's revised edition is an improvement on the previous edition, and if the chapters mentioned in this review are omitted and the remainder enlarged, with greater attention to recent work, the next edition should be a first-class text-book. In the meantime, however, the present volume can be thoroughly recommended to students as a readable, well-designed, and well-produced text-book.

J. J. H.

PULPA-UND WURZELBEHANDLUNG. By Prof. Dr. O. MÜLLER, Vorsteher der konservierenden Abteilung und des histologischen Laboratoriums des zahnärztlichen Instituts der Universität Basel. $6 \times 8\frac{1}{2}$ in. Pp. 220. With 214 illustrations. 1953. Basel: Benno Schwabe & Co. Sw. Fr. 26.

THIS book belongs to a series of text-books for the use of dental students and practitioners. The research worker, too, will find a wealth of information on pulp- and root-treatment.

The fundamental idea of the book is the prophylaxis of pulpitis and periodontitis. Therefore approximately one-third of the text is devoted to the treatment of caries profunda and of the filling of root canals.

The first of the seven chapters deals with the treatment of carious dentine provided of course that the pulp is neither irritated nor infected. The walls of the cavity have to be cleared completly from decay, but the pulp-near floor of the cavity should be treated with the greatest care as the exposure of the pulp must be avoided. If infected dentine is left behind, it should be disinfected. Quite a number of agents are mentioned which disinfect carious dentine without irritating the healthy pulp. Next the treatment of hypersensitive and secondary dentine is widely discussed.

Another chapter deals with the two forms of pulpitis, *p. acuta* and *p. chronica*, their diagnosis and treatment. The dogma that the injured pulp is a lost organ is no longer valid. In many cases capping with calcium salts or ivory powder proved successful, as the damaged pulp recovered by forming a barrier of secondary dentine. If, on the other hand, the infection has advanced, the pulp has

either to be devitalized and extirpated or it has to be amputated. The different methods are described in full detail, including the failures. Twenty pages are devoted to a discussion of the anatomy of the root canals, i.e., the most important ramifications near the apex. The last two chapters deal with the filling of root canals, the various methods and instruments employed, and the importance of asepsis and antisepsis during these operations.

It is not possible in a short review to go into more detail, but it should be emphasized that the 200-odd brilliant photomicrographs add greatly to the value of this book. It is the result of the author's lifetime experience, as a teacher, a research worker, and a practitioner.

The serious student of conservative dentistry will find a wealth of information and many hints which will no doubt facilitate the practice and application of the recommended methods. Over 300 references, mostly Swiss, German, and American, conclude this book which should not be missing from a dentist's library. H. J. T.

CLINICAL PERIODONTOLOGY. By ABRAHAM BERLINER, D.M.D., Head of Division of Periodontology and Dental Pathology, Sydenham Hospital, New York; Head, Department of Periodontology, Lenox Hill Hospital, New York; Member of the Eastern Graduate Research Foundation. $6\frac{1}{2} \times 10$ in. Pp. 249, with 219 illustrations. 1953. New York: The Park Press. 144s. (Limited first edition.)

IN his preface the author states that the days of empiricism are numbered and the declared object of this book is to bridge the gap between theory and practice.

This work has not been written for undergraduate dental students, but for practitioners with a basic knowledge of periodontology. It is, therefore, not to be regarded as a complete treatise even on the clinical aspects of the subject, let alone the underlying anatomy, physiology, and pathology.

A great deal of the material presented is the author's own, and is not to be found in any of the well-known text-books. For example, he postulates a theory of the "biologic grain" of cementum, and so develops a new technique of scaling, although the evidence advanced to support this theory is scanty. Similarly functional analysis of the occlusion is performed on a very simple form of articulator which permits only a vertical movement and not even a simple hinge action! A self-limiting intra-pocket epithelial scalpel after the pattern of an ordinary kitchen potato-peeler is described, but unfortunately not very clearly illustrated.

The experienced periodontologist will be able to read this book with a critical eye and carefully assess its chief value, which is claimed to be a biologic approach to practice; the general practitioner may find some difficulty in appreciating fully all that has been written.

It is to be regretted that many of the illustrations are not of a very high standard, whilst the repetition of several of these, together with a more than usually large number of blank pages between sections and chapters, has probably inflated the price to a rather higher level than might otherwise have been necessary even for a limited first edition. The quality of the printing and binding is excellent. A. B. W.

DIE PARADENTOPATHIEN. By Prof. Dr. SILVIO PALAZZI, Milan, Director of the Dental Clinic of the University of Pavia and of the Stomatological Institute of the University of Milan. $6\frac{1}{4} \times 9$ in. Pp. 188, with 115 illustrations. 1953. Basle: Benno Schwabe & Co. Sw. fr. 24.

THE author states that this book has been written from a medical and dental viewpoint for both specialists and final year students.

The book is divided into eight main sections: Embryology, Anatomy, Biology and Physiology; Inflammatory Types of Periodontal Disease; Aetiology and Pathology; Pathological Anatomy; Symptomatology and Diagnosis; Periodontoses; Paradentomata (Epulides); and Treatment. In a short work of this nature, the number of pages allocated for treatment (42) seems rather small. On the other hand there are no less than five pages on paradentoliths (cementicles), although the

author points out that their clinical significance is small, and nine pages on paradentomata (epulides). Terminology is that favoured on the continent of Europe as a whole, and will not be generally acceptable.

Typographical errors appear to be few, although there is Bereite for Breite (p. 29), and some inconsistency in the use of the adjective *paradental*, e.g., Paradentalgewebe (p. 101) and Paradentialgewebe (p. 105). A further inaccuracy is the reference to the drug "epanutin" (sodium diphenyl hydantoinate) being known in England as "epantil". It is, in fact known as "epanutin" or "dilantin". The author's statement that this drug has a hypnotic action is incorrect and may not go unchallenged.

In his description of the cementum the author takes the viewpoint that the death of the cementum is a physiological occurrence in senile involution, and that its vitality is dependent on local and general factors. As the vitality of the cementum decreases the alveolar bone is lost. There is an interesting account, after Hruska, of racial tendencies to periodontal disease which is well worth studying. Few periodontists will agree that the use of graduated gutta-percha points is a convenient method of measuring the depths of pockets (p. 111).

In the chapter on treatment no reference is made to modern concepts of occlusal equilibration by selective grinding, and the author is in favour of producing a "Schlittenartikulation" by grinding the occlusal surfaces flat.

With regard to splinting, the author alleges that the Americans, who for forty years had taught a doctrine of devitalization of bridge abutments and crowned teeth, now take the view that no pulpless tooth should remain in the mouth, thereby going from one extreme to the other. It is very doubtful whether this concept of American teaching would be regarded as accurate by the Americans. After stating that pinlay appliances for fixation have a very limited field, the author goes on to describe the construction of such appliances in considerable detail. His conclusion that post crown type of fixed splinting is the best and has fewest disadvantages will meet with very limited approval. In discussing surgical treatment, emphasis is placed on the radical flap operation of Widmann-Neumann type. Gingivectomy is given a limited account which includes the use of scissors to sever the interdental papilla; this is now generally acknowledged to be more satisfactorily accomplished by means of a knife.

No mention is made of the use of a pack post-operatively. A detailed description of the Dunlop method of wax pack and oxygen insufflation is given, but not of the cement type pressure pack. No mention is made, moreover, of home care except for four diagrams illustrating a tooth-brushing technique.

The book is well printed on excellent paper and the illustrations are clear and have reproduced well.

While individual chapters, dealing with particular aspects of the author's researches and experiments, will be of interest to other specialists, this book cannot be recommended to the undergraduate student for the reasons that with regard to treatment it is insufficiently detailed, illustrating few clinical cases, on the one hand, and that several principles of treatment proposed are not in line with modern teaching on the other. W. G. C.

THE YEAR BOOK OF DENTISTRY (1953–1954 *Year Book* series). Edited by STANLEY D. TYLMAN, D.D.S., M.S. (Prosthetic Dentistry), DONALD A. KEYS, D.D.S. (Operative Dentistry), JOHN W. KNUTSON, D.D.S., Dr.P.H. (Public Health), HAROLD J. NOYES, D.D.S., M.D. (Orthodontics), HAMILTON B. G. ROBINSON, D.D.S. (Oral Pathology and Oral Medicine), and CARL W. WALDRON, M.D., D.D.S. (Oral Surgery). $5\frac{1}{8} \times 7\frac{5}{8}$ in. Pp. 493, with 337 illustrations. 1954. Chicago: The Year Book Publishers Inc. (London: Interscience Publishers Ltd.) 45s.

THIS excellent volume published annually needs little introduction to the profession. Its reputation and its value are as high as ever, and it brings to the practitioner a résumé of the year's progress in dentistry. The book is divided into seven sections: Diagnosis; Pulpal and Periodontal diseases; Caries; Public Health; Orthodontics; Surgery and related

pathology; Restorative and prosthetic dentistry. Each section takes selected articles published between September, 1952, and August, 1953, in dental journals throughout the world, and presents a brief account of each. The range of articles is wide and carefully chosen, and both the general practitioner and the student will find a wealth of information within its pages.

The printing and illustrations are of a high order and its handy size will commend it to everyone. N. L. W.

ORAL AND FACIAL DEFORMITY. By C. KERR MCNEIL, Ph.D., L.D.S., Senior Lecturer, University of Glasgow, Examiner in Dental Prosthetics and Dental Mechanics, University of Glasgow; Hon. Consultant, Glasgow Dental Hospital and Royal Hospital for Sick Children, Glasgow. With a Foreword by PROFESSOR JAMES AITCHESON. $5\frac{1}{2} \times 8\frac{1}{2}$ in. Pp. viii + 127, with 191 illustrations. 1954. 25s.

THIS is not to be considered as a text-book on oral and facial deformity, but a thesis published in a form of a book in which mainly oral deformity is discussed. The subject is covered in ten chapters and is well illustrated. Chapters are headed as follows: Introductory, Historical, Malformation, Survey of Cases, Technical Procedures, The Young Patient, Observations, Etiological Considerations, Treatment, and Conclusions.

Although some of the methods outlined can now be considered as old-fashioned, some original work has been considered, such as the physiological approach to stimulation of growth of tissues, control of alinement of the infants' dental arch, and incidence of twinning. Students of research in this speciality will derive much benefit from studying this book. H. M.

CLINICAL DENTAL PROSTHETICS. By H. R. B. FENN, F.D.S. R.C.S. (Eng.), D.D.S. (Penn.), Professor of Dental Prosthetics, University of London; Director of Dental Prosthetics, Guy's Hospital Dental School; K. P. LIDDELOW, F.D.S. R.C.S. (Eng.), H.D.D. R.C.S.(Edin.); Head of the Prosthetics Department, King's College Hospital Dental School, etc.; A. P. GIMSON, L.D.S. R.C.S. (Eng.), Senior Lecturer in Dental Prosthetics, King's College Hospital Dental School. $5\frac{1}{2} \times 8\frac{1}{2}$ in. Pp. 502 + xxx, with 350 illustrations. 1953. London: Staples Press.

THE keynote of this book is to be found in the dedication—"To all past, present, and future Dental Students". The authors have set themselves devotedly to display to undergraduates the ideas and methods of clinical prosthetics. By rigorous use of a clear and economical style—a style that is consistent to a surprising degree considering the plural authorship, and which bespeaks and confirms the closeness of their co-operation—and a lavish use of simple and clear diagrams, they have succeeded in their aim in a manner which not only triumphantly justifies the dedication but which also makes the book a most useful acquisition for every dentist.

After a brief discussion of the principles upon which the full denture prosthetist relies to justify his aims and operations, there is a useful chapter on the applied anatomy of the edentulous mouth, and then follows, in due order, a full account of chairside procedures. These chapters can be relied upon as providing very sound and sane guidance to the student in his quest for clinical proficiency, as well as to the practitioner seeking illumination of long-established habit. The chapter on impression taking is particularly good, but an important omission is the failure to emphasize that one of the virtues of the compression composition technique is the achievement of automatic relief. It is true that this idea is implicit in the discussion of the technique, but it is important enough to deserve explicit statement. Another very useful chapter is that on "Complaints".

The section on partial dentures contains a very great deal of information, and contrives to cover a great part of the field. Included in this section is an admirable series of photographs, each of which is well chosen and annotated.

This book fills a definite need and fills it well. The observable small discrepancies that

are present are few, and will no doubt be corrected in the later editions that will certainly be required. In regard to the content of the book, the authors are to be congratulated on their selection of material and its presentation. A little more space, however, could well have been devoted to the wider implications of prosthetics in relation to dentistry in general, such as, for instance, that partial prostheses have a therapeutic as well as a prophylactic significance in parodontics. In full-denture prosthesis, also, it is surely in place to emphasize that the alveolar ridges, those transient remnants, must be given consideration long before the patient comes to the point of requiring multiple extractions, and that the prosthetist develops from the dental surgeon, not vice versa. S. F. F.

ABSTRACTS
from Other Journals

Carcinoma of the Floor of the Mouth

A symposium of a subject, though rare, but most important—as it concerns the life of a patient—is well described and illustrated by the authors. A few of the main points that are discussed may be summarized as follows:—

The disease is most common in men.

Many tumours develop in edentulous mouths.

Differential diagnosis, although not easy, is straightforward.

No single method of treatment can claim pre-eminence in its control.

Half-hearted attempts by any method are doomed to fail.

Bone invasion by an epithelial cancer of the floor of the mouth is an indication for surgical treatment as the first choice.

Bone-grafting should be delayed till primary healing of the soft tissues is achieved and the scar stabilized.

The following are considered inoperable:—

a. Involvement of pharyngeal mucosa and pharyngeal part of the tongue.

b. Adherence or fixation of lymph-nodes.

c. Œdema of subcutaneous tissues.

d. Gross involvement of soft tissues in the submandibular or submental areas.

Symptoms show considerable variations.

All patients should be hospitalized, as they need skilled nursing, adequate rest, and special attention to their diet and fluid intake.

Complications following radium treatment may prove fatal, e.g., hæmorrhage and necrosis of soft and hard tissues.

Teeth are not always the cause of the disease.

Cure-rate for early cases may be as high as 60 per cent.—CADE, Sir STANFORD, WINDEYER, B. W., GARDHAM, A. J., DOBBIE, J. L. (1953), *Brit. J. Surg.*, **61**, 225.

Relationship of Superior Labial Frænum and the Midline Diastema

A survey of the present attitude of orthodontists toward the necessity for frænectomy is analysed in this paper.

The general conclusions were that fewer frænectomies are now being performed, the consensus of opinion being that closure of the midline diastema could be effected in most cases by orthodontic treatment alone.—CEREMELLO, P. J. (1953), *Amer. J. Orthodont.*, **39**, 120.

Interdental Separation in Subclinical Acromegaly Caused by Sinusitis

Seven case-histories of patients whose pituitary gland was probably stimulated by toxins from chronic sinusitis are presented. Mild acromegaly was accompanied by widening of the interdental space.

The symptoms of chronic sinusitis include constant sniffing and hacking in the absence of an admitted cold, frequent colds and coughs, morning headache, rheumatic pains, ill effects of prolonged recumbency, anorexia for breakfast, dark circles beneath eyes, puffs beside nose, and tenderness of the sinuses to palpation and to percussion. Cervical adenitis is uniformly present.

The diagnosis of acromegaly is easily made in frank cases. In mild or subclinical cases of acromegaly, only slight enlargement of the jaw takes place, accompanied by a correspondingly slight separation of teeth. Without simultaneous enlargement of the hands and feet, the diagnosis remains in doubt. In four of the seven cases presented, both interdental separation and acral enlargement occurred. In the other three, subclinical acromegaly was suspected because there was separation of teeth not accounted for by drift, presumably caused by enlargement of the jaw. Furthermore, an active chronic systemic infection was present while the teeth were separating.

Tumour and infection are the common incitants of the pituitary resulting in acromegaly. The role of infection requires emphasis.

In one case described, the treatment of the sinusitis arrested the separation of the lower central incisor teeth.—BROWN, E. E. (1953), *Amer. J. Orthodont.*, **39**, 932.

Observations on the Clinical Use of a Chlorophyll Dentifrice

The effects of uncontrolled brushing of the teeth with a dentifrice containing chlorophyll were studied in a group of 129 patients. The lactobacillus counts of 20 patients were not affected by 6 to 9 months of brushing with this dentifrice.

In another study, 109 patients used the same chlorophyll-containing dentifrice; and another group of 137 patients used their regular dentifrice. Although there was some trend towards diminished bleeding of the gingivæ in the first group, the findings were not considered statistically significant. When the two groups were compared, after an experimental period of 6 to 9 months, there were no significant changes in sensitivity, on curettement of the gingivæ, or in gingival appearance.—KUTSCHER, A. H. (1953), *J. Amer. dent. Ass.*, **46**, 420.

The Common Diseases of Practising Dentists

Fifty-six practising dentists were studied at a private group clinic in routine examinations which included physical examination, electrocardiography, fluoroscopy, blood and urine studies, and roentgenographic examinations when indicated. They were observed during a period of years, so that the original diagnoses could be carefully corroborated.

A state of anxiety was the most common condition; it was present in 24 cases, or 42·1 per cent of the group. Gastro-intestinal disorders were noted in 20 cases, or 35·7 per cent; whereas cardiovascular disabilities were found in 17 cases, or 30·5 per cent. Respiratory ailments were present in 25 per cent of the members, and rheumatic conditions were found in an equal number. Two cases of malignancy were present. One case of postural low backache was found. This was the only case which could be classified as being of an occupational aetiology.

The conditions were compared with those of the other patients at the clinic, and it was found that a state of anxiety was present in only 12·3 per cent of the general group, and cardiovascular disease was present in only 18·3 per cent. In these 2 categories the dental group showed a much higher incidence of cases than did the general population. It is concluded, therefore, that a state of anxiety (in particular) and cardiovascular diseases (to some degree) are related to the stress and strain of the practise of dentistry.—BERNSTEIN, A., and BALK, J. L. (1953), *J. Amer. dent. Ass.*, **46**, 525.

Operative Procedures for the Mixed Dentition

Bite-wing radiographs are essential to dentistry for children. They show early interstitial caries, demonstrate the depth of advanced caries, and to some extent suggest the method of treatment.

Calcium hydroxide is preferred to zinc oxide as a protective base under linings in deep cavities in young permanent teeth.

There is not enough evidence of a successful pulp capping procedure to warrant its use after exposure of a vital pulp. The treatment of choice is pulpotomy.

Of necessity, amalgam restorations in deciduous teeth are lacking in bulk, and therefore in strength, and for this reason the greatest care must be taken in mixing and manipulating the amalgam to produce the maximum

material strength. It is not necessary to use rubber dam on every child, but when applied in a delicate or painless manner its use will save time as well as assistance.—MILLER, E. C. (1953), *J. Dent. Child.*, **20**, 93.

Pterygomandibular Space in Relation to Effective Mandibular Block Anæsthesia for Children

The mandibular sulcus is the ideal point to deposit anæsthetic solution in order to anæsthetize the inferior alveolar nerve.

The mandibular sulcus of the pre-school child is located two-thirds of the way back on a line connecting the centres of the concavities of the anterior and posterior borders of the ramus of the mandible.

The point of entry of the pterygomandibular space is on the level of the centre of the concavity of the anterior border of the ramus in the mucosa, half-way between the anterior border of the ramus and the pterygomandibular raphe.

The horizontal and vertical angulation of thrust is determined by the observed flare of the ramus, and the plane of least anteroposterior dimension of the ramus respectively.

The depth of penetration by the needle is limited by the posterolateral bony wall of the mandibular sulcus.—VIA, W. F., (1953) *J. Dent. Child.*, **20**, 105.

Facial Disfigurement due to Extractions

In reply to several questions regarding facial disfigurement after dental extractions, the following answer was given.

A deepening of the nasolabial fold invariably follows the extraction of all the teeth, the loss of the upper canines being the main cause. The effect can be minimized by the construction and wearing of "immediate dentures" and the continuous use of well-fitting plates; rarely can a denture be worn for more than a few years without requiring some alteration if the soft tissues are to remain fully supported. The denture should be worn continuously, only being removed for cleaning.

Established furrows cannot be eliminated by prosthetic means though much can be done to minimize them by judicious plumping of well-fitting dentures. For complete removal a plastic surgeon should be consulted.—"Any Questions", *Brit. med. J.*, 1953, **2**, 1388.

ORTHODONTIC EDUCATION, CERTIFICATION, AND LICENSURE

PROFESSIONAL education, recognition of specialists through certification, and the regulation of specialists by law are interrelated.

Undergraduate Courses in Orthodontics

Are these to train students so that they may accept a certain number of orthodontic cases in later years? Do they set out to give an orientation and appreciation of what the specialist can do? Is their purpose to acquaint the future general practitioner with the principles of growth and development?

It is apparent that the pattern of the undergraduate course was set when the mechanical phases of dentistry occupied a larger *relative* role than to-day, the assumption being that orthodontic treatment was a phase of general practice. In some schools the orthodontic course has changed but little, suggesting that the curriculum has failed to keep pace with the changing attitude. With the passage of time, orthodontists have voiced their view that the work properly belongs to the specialist; in this they have won increasing assent from the general practitioner. The dental curriculum as ordinarily provided does not allow enough time for instruction in treatment itself, didactic or clinical, but it seems quite possible to use the time to stress, not only the benefits and accomplishments of treatment, but also the pitfalls awaiting the partially trained.

Two entities recur frequently in the arguments for and against teaching orthodontic treatment in the undergraduate curriculum; the "Simple Case" and the "Country Dentist". The simple case is one which can be treated with the precepts taught in the limited time. It is elusive in definition and in untrained hands has the faculty of developing into a

case of terrifying proportions. The country dentist practises in a community too small to support a specialist; it is argued that he should have sufficient training to enable him to treat cases which otherwise would be neglected.

The ideal solution would be for simple cases to go to the country dentist. Until such a satisfactory distribution of patients is substituted for what actually exists, we can only hope that ease of transportation will lead residents of outlying districts to seek competent professional care.

A modification of the conventional dental curriculum has been tried at the University of California with the intent that residents of small communities find a happier solution for their orthodontic problems.

In teaching men destined for general practice some orthodontic teachers have avoided technical instruction altogether; others have felt that a proper understanding of orthodontic objectives and procedures is impossible without basic groundwork which is usually omitted from "basic science" courses, and viewed with indifference by other clinical departments. Post-natal growth and development is a proper subject of study for dental students; it provides an important substratum for every clinical phase of dentistry and will be accorded the respect it deserves only when taught as basic material and when other departments bring it into clinical instruction.

Whilst technical and clinical instruction for undergraduates should be approached with caution, the orthodontic teacher should not provide the biologic fundamentals, however valuable, under the orthodontic label. What is proper orthodontic instruction for the undergraduate when he intends to practise general dentistry? The teacher should show what his field of endeavour can do for patients with limitations of and indications for treatment, and point the way for consultation and co-operative action with others. With stress on what may be accomplished rather than upon how, the best use of available time is made. This does not imply that the general practitioner should never attempt to move teeth, nor that instruction in preventive and palliative procedures be omitted from the undergraduate curriculum. Fortunately, pædodontics is gaining more time in the dental schools and in the hours devoted to it students are handling cases involving a limited amount of tooth movement. The removal of these procedures from the orthodontic label is good, for it emphasizes their special and limited nature.

California Undergraduate Orthodontic Major

I have directed a programme of orthodontic teaching at the undergraduate level for five years to meet the particular needs of California; it was called the "Preventive Curriculum", to distinguish it from the "Restorative Curriculum". It was not meant to train specialists in orthodontics but provide instruction to enable men to meet all the dental needs of a family, including orthodontic treatment.

Many small communities, large enough to have a dentist or two, but too small to attract a specialist in orthodontics, provided the dental requirements for adults, but children were required to go to a nearby metropolis to enjoy the care of an orthodontist. It seemed a change in the curriculum could alter this for the better.

The elective "Preventive Curriculum" was made available to students at the end of their first year when technique courses in prosthetics and crown and bridge had been completed: it was proposed that clinical instruction in these be omitted and a three-year course in orthodontics be given instead. All other courses were to be taken by those electing to take the "Preventive Curriculum". Upon graduation these men would be the equals of their "Restorative Curriculum" classmates in all phases of dentistry except the two mentioned, but they could practise orthodontics by virtue of having had the approximate equivalent of a full-time or eighteen-month post-graduate course. In a small community they could render nearly complete dental service but would refer prosthetic and crown and bridge work; such patients are at an age when they can travel more conveniently than orthodontic patients.

Nearly every graduate of the "Preventive Curriculum" has specialized in orthodontics;

the programme must, therefore, be judged primarily as preparation for such.

The first year of the "Preventive Curriculum" is devoted to technical instruction in filing, soldering, band-forming, impression-taking, and model-forming, with exercises on the typodont; fundamentals of orthodontic treatment are given, so men are prepared to enter the clinic the next year. In the senior year there are courses in advanced clinical theory, with seminars on case analysis and treatment planning. A thesis is required and frequently an original piece of work is undertaken. Concurrently a full-time post-graduate course with joint attendance of both groups in certain classes has been offered. The greatest advantage is the spreading of instruction over three years; work given in concentrated doses is learnt less effectively than is the same amount distributed over a longer interval. The California Orthodontic Major is a full-time student but a part-time orthodontic pupil. It may be said that undergraduates lack the maturity to undertake a speciality field. In that case perhaps schools should insist that a subsequent number of years of general practice be a prerequisite to any speciality course, but it is a difficult position to maintain when a speciality already demands eight years of higher education.

To judge the California programme, one question which must be answered is: "Is it necessary to have made a certain number of dentures, crowns, and bridges to be a competent orthodontist in later years?" Some would say "Yes".

Graduate v. Post-graduate Orthodontic Courses

Some schools which rightly feel that they can offer a well-rounded speciality course will find it difficult to persuade the graduate school to give it approval. A University is distinguished from other educational institutions by the fact that it not only imparts knowledge but expands the field of knowledge. Course work for graduate study cannot be evaluated arbitrarily. An effort is made to see the field objectively and in its entirety, with critical evaluation of other people's views as well as one's own. On the other hand, if the kind of uncritical absorption demanded of dental students is required for learning a speciality, then the label of graduate study should not be sought, however rigorous the course.

If clinical orthodontics is to be taught simply as material for which there is no room in the undergraduate dental course, using the same teaching methods, then it is not a graduate discipline. Some see a great gulf between the teacher and student, with one hauling the other towards him by the most direct means possible. They show a misguided concern over protecting the student from ideas which they cannot accept themselves and they teach a limited concept of clinical practice. This is not to say that such dogmatic teaching is entirely out of place; his best student will not be a "Master" of anything but the particular set of ideas to which he has been exposed.

"Refresher" courses are another important phase of education in which cut-and-dried instruction is justifiable and practical. The student may do well to take much of the information on faith till such time as he can contemplate it for himself.

Certification and Licensure

Six states have established laws regulating dental specialities. It is logical that both are considered together, since they involve regulation of the specialities. One provides control autonomously and the other through legislation; the advocates of the latter are nearly always the advocates of certification as well, and they point out that the two different functions are necessary. The speciality boards elevate standards while state laws protect the public. It should go without saying that the speciality law does not prevent the licensed dentist from rendering occasional services within the province of the licensed specialist; it strikes only at the representation which the man may make to the public.

The Preventive Curriculum at the University of California has shown itself to be an effective programme for training specialists in orthodontics though the original intention of its sponsors was somewhat different.—WYLIE, WENDELL L., D.D.S., M.S., (1951), *Amer. J. Orthodont.*, **37**, 376.